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**Passaic Valley Sewerage Commissioners**

**Passaic Valley Sewerage Commissioners  
Response to Request for Information  
USEPA, Region 2**

**Item No. 1.a  
PVSC Report 1.a**

**Document order #2**



Passaic Valley Sewerage Commissioners  
Response to Request for Information  
USEPA, Region 2

**Item No. 1.a**

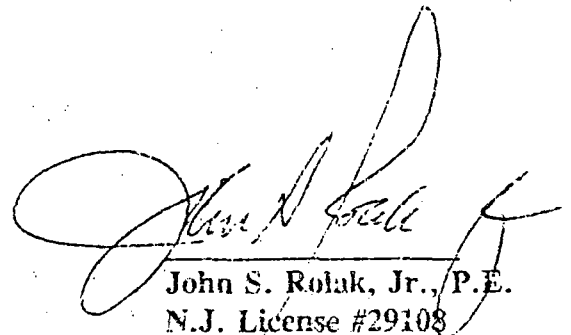
PVSC Report 1.a.

*Passaic Valley Sewerage Commissioners*

**Interim**

**Service Area Drainage and  
Land Use Report  
for the Towns of  
Harrison and Kearny,  
The Borough of East Newark, and the  
Cities of Newark and Paterson**

**February 1996**



John S. Rolak, Jr., P.E.  
N.J. License #29108

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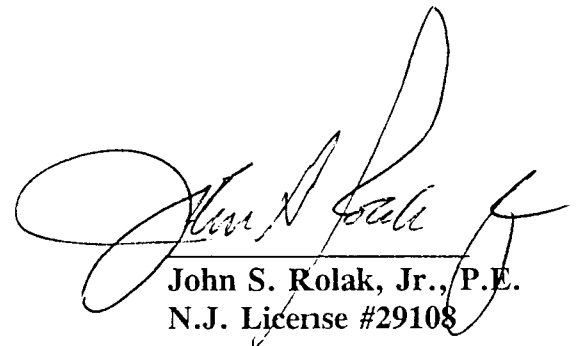


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**I. Purpose and Objectives**

The General Permit for combined sewer systems requires the development of a CSO Discharge Characterization Study consisting of a field calibrated and verified Combined Sewer Overflow Model designed to represent the combined sewer system's response to historical events of precipitation. The purpose of the Service Area Drainage and Land Use Report, as outlined in Part V.B.4.b. of the General Permit for Combined Sewer Systems NJPDES No. 0105023, is to provide the documentation required to substantiate the selection of monitoring locations' proposed for field verification and to provide background data necessary for the development of a Storm Water Management Model (SWMM) for each catchment area.

The objectives of this report area are to develop from existing information, and on a drainage or catchment area basis, the following:

- a) the drainage area boundaries for each combined sewer overflow control facility and discharge point;
- b) the area, ground slope, overland flow width, subcatchment length, and percent impervious cover;
- c) the location of significant non-residential users;



- d) the location of separate sanitary and storm sewered service areas including the specific point of connection to the combined sewer system;
- e) the land use distribution by residential, commercial, industrial, and open space areas;
- f) the service area population and estimates for dry weather flow, and the average concentration of each pollutant; and
- g) the size, location, and capacity of the sewage treatment plant, any pumping stations servicing combined sewer areas, and all CSO Control facilities including an understanding of its relationship to the overall system.

It should be noted that the information provided herein is preliminary and based upon existing data.

The information will be verified during the CSO Modeling Study and where necessary updated in the final version of this report.



## II. Introduction

The Passaic Valley Sewerage Commissioners (PVSC) provide wastewater treatment service to forty-seven (47) municipalities within their northeast New Jersey service district. The PVSC District covers approximately 150 square miles, mostly within the Passaic River drainage basin from Newark Bay to the Great Falls in Paterson. The main interceptor sewer of the PVSC, which begins at Prospect Street in Paterson, generally follows the alignment of the Passaic River to the PVSC Pollution Prevention Facility in the City of Newark.

Seven (7) of the municipalities within the PVSC District have combined sewer systems which have received Authorization to discharge under the General NJPDES Permit for Combined Sewer Systems NJ0105023. Two of the combined sewer municipalities, the Cities of Bayonne and Jersey City, own and operate their own combined sewer systems, interceptors, CSO Control Facilities, and pumping stations, and jointly own the force main used to transport wastewater to the primary clarifiers at the PVSC treatment plant in Newark. The PVSC does not have any combined sewer overflow control or transportation facilities which service this section of the District. Consequently the Cities of Bayonne and Jersey City will be undertaking their own Discharge Characterization Studies.

The other municipalities in the District with combined sewer systems include the Towns of Harrison and Kearny, the Borough of East Newark and the Cities of Newark and Paterson. These municipalities are all tributary to PVSC interceptors and most of their combined sewer systems are tributary to CSO control facilities owned and/or operated by PVSC. Accordingly PVSC has offered to undertake the CSO Discharge Characterization Study, including this Service Area Drainage and Land





Use Report, on behalf of the Towns of Harrison and Kearny, the Borough of East Newark, and the  
Cities of Newark and Paterson.



### III. Service Area Drainage

#### 1. Previous Studies

The Passaic Valley Sewerage Commissioners conducted a Combined Sewer Overflow Analysis (Overflow Analysis) in the mid-1970's of all combined sewer control facilities and bypasses which discharge to the Passaic River. The work was undertaken as part of the District's Phase 1 Sewer System Evaluation Survey by Killam Associates and was reported upon in a 1976 Report to the Passaic Valley Sewerage Commissioners. The study developed detailed background information upon each of the PVSC combined sewer control facilities including the physical size and hydraulic characteristic of the regulator. In addition to the physical characteristics of the subcatchment and control facility, monitoring of each regulator was conducted to develop base information upon dry and wet weather flows and water quality. The 1976 Report was used as a principal source of information in the development of this report.

As an extension of the 1976 Overflow Analysis, the PVSC undertook a Combined Sewer Overflow Facility Plan (Facility Plan) in the early 1980's which included the development of SWMM 3 Models for the major combined sewer overflow areas and a Dynamic Network Model of the Passaic River. Detailed mapping of the combined, sanitary, and storm sewer systems tributary to the Passaic River was undertaken in each CSO municipality and completed under the Facility Plan. In addition, all major collector sewers tributary to the PVSC CSO control facilities were surveyed and profiled. Site specific information on the land use distribution and impervious areas of each major drainage basin were developed and reported upon in the Facility Plan. The PVSC Combined Sewer Overflow Facility Plan, dated



1983, was also used as a principal source of information in the development of this report.

While the Facility Plan included the development of land side and receiving water characteristics, the background and model development was restricted to the major combined sewer drainage basins tributary to the Passaic River. Since that time the PVSC has entered into an agreement with the City of Newark to operate the South Side Interceptor which was not part of the previous study area. The South Side of Newark includes three (3) major combined sewer drainage basins (Peddie, Queen and Waverly) which have a service area of over 3,000 acres. The combined sewer control facilities which control flow to the interceptor discharge to the Peripheral Ditch surrounding the airport. The land use information which had been developed under the Facility Plan has therefore been supplemented and expanded to include all sixty-three (63) PVSC control facilities including data on the combined sewer systems tributary to the South Side Interceptor (Newark South Side).

## **2. Additional Information**

The Service Area Drainage and Land Use Report does herein incorporate by reference the **Passaic Valley Sewerage Commissioners Combined Sewer Systems for East Newark, Harrison, Kearny, Newark and Paterson, Facilities Inventory Sewer Service Area Maps** dated February 1996, and the **Passaic Valley Sewerage Commissioners Combined Sewer Overflow Facilities Plan, Profile of Major Interceptors**. The above referenced documents provide significant information on the combined sewer systems tributary to CSO Control Facilities within the study area.

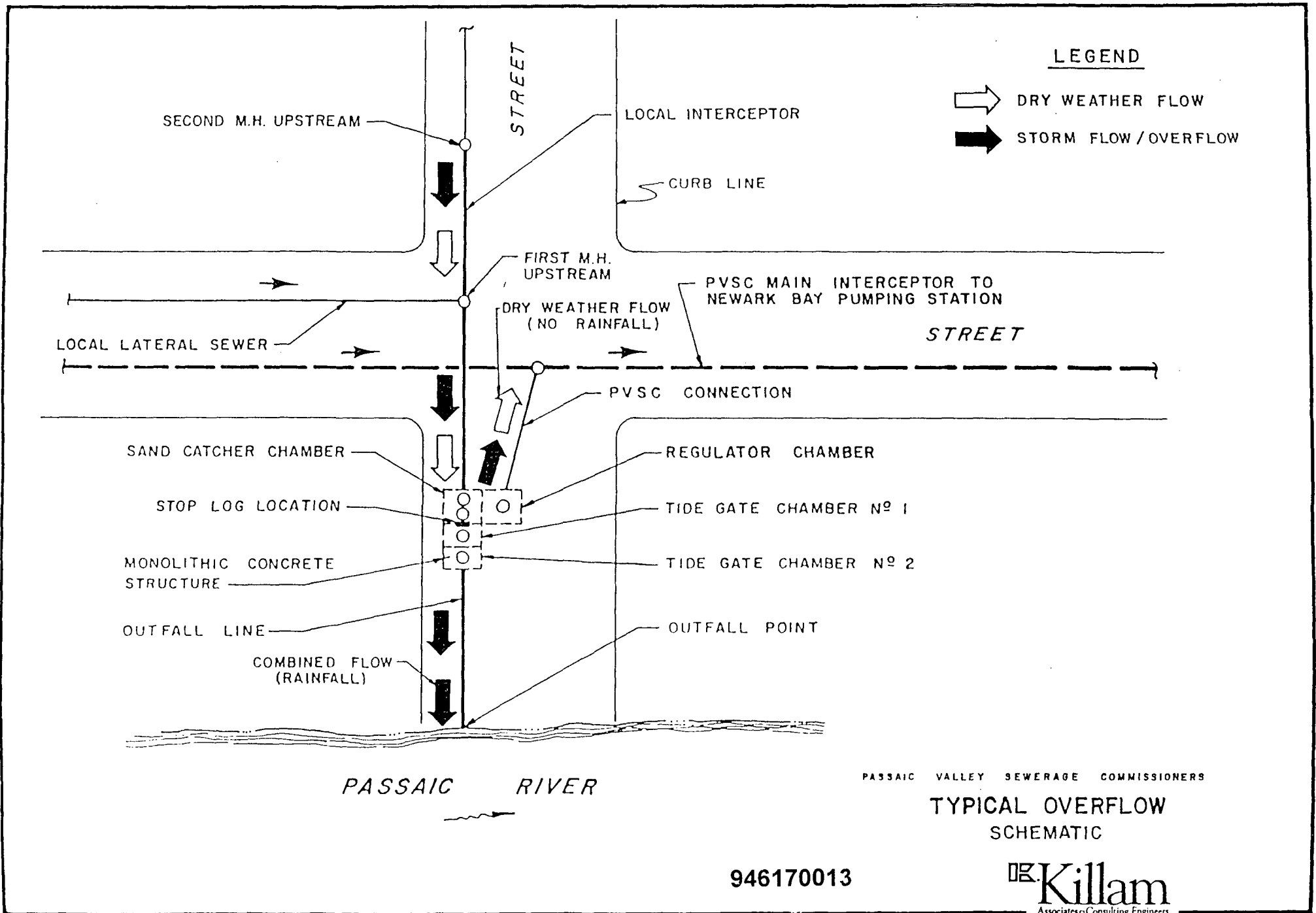
### 3. Drainage Area Data

In general, the drainage basin or subcatchment of a CSO is defined by the tributary area which contributes flow to the PVSC owned or operated interceptor sewer. During dry weather, wastewater flows from the drainage basin enter the CSO control facility and is diverted to the PVSC interceptor by means of a regulator gate or orifice. Wastewater flows exceeding the capacity of the regulator gate or orifice during wet weather results in the water levels in the sandcatcher, or inlet chamber, to increase until water levels reach and exceed the height of the overflow weir. In most cases, once this occurs there is a release of a combined sewer overflow. A typical combined sewer overflow control facility schematic is illustrated in Figure 1.

Detailed drainage area data has been compiled for the combined sewer system tributary to each CSO control facility. Information is provided in graphical, tabular and narrative form on general subcatchment information, sewer system size and type (combined, sanitary, or storm), and those system characteristics, such as population and significant non-residential users, which impact pollutant loads and hydraulics.

#### 3.1 Service Area Land Use Distribution and Impervious Area

As previously indicated the PVSC District encompasses approximately 150 square miles and includes forty-seven municipalities, of which seven contain combined sewer systems. Figure 2 illustrates the entire PVSC service area as well as those combined sewer systems which have been included (East Newark, Harrison, Kearny, Newark and Paterson) and excluded (Bayonne and Jersey City) from the Report Area. As previously indicated this

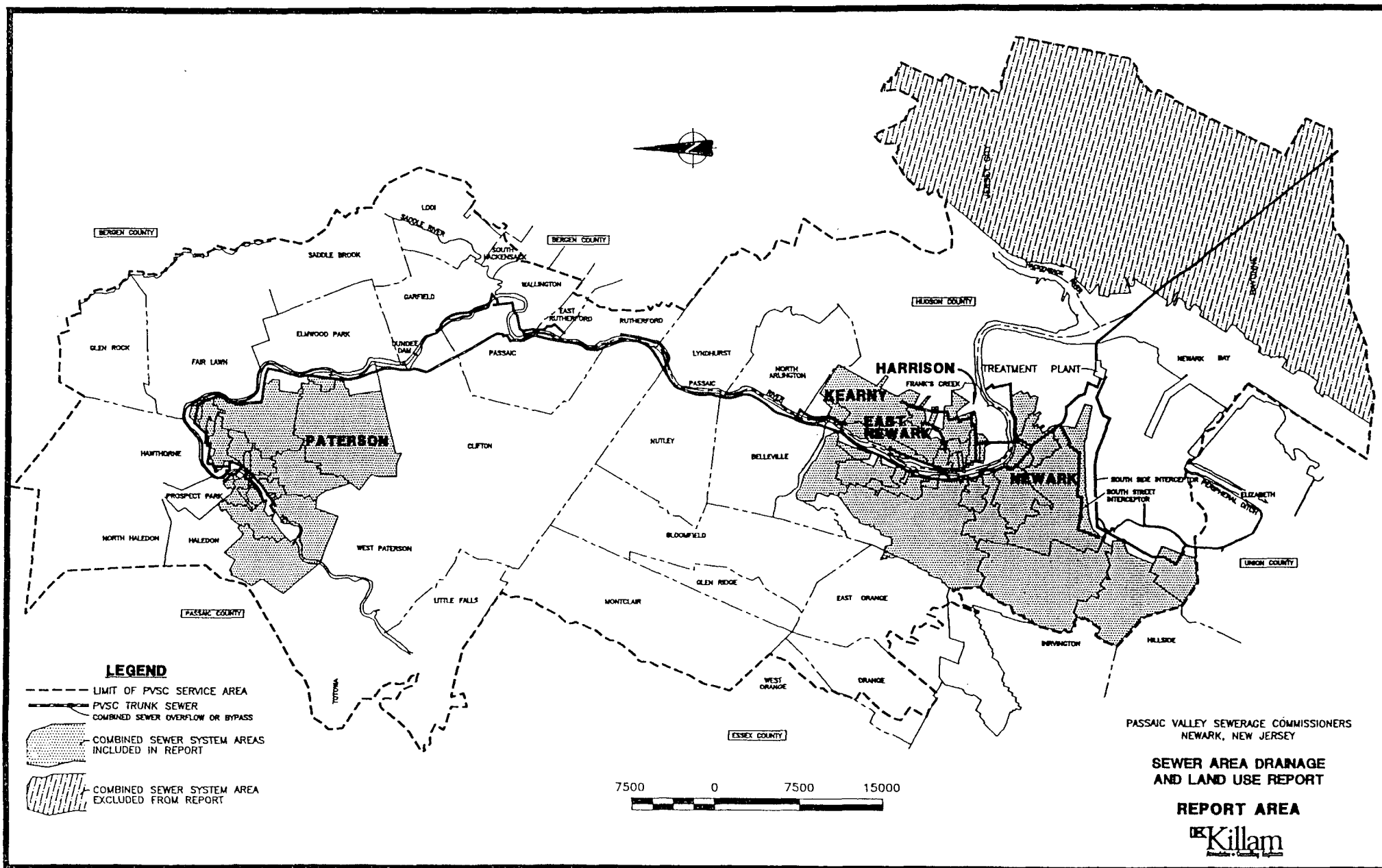


PASSAIC VALLEY SEWERAGE COMMISSIONERS

# TYPICAL OVERFLOW SCHEMATIC

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**Killam**  
Associates Consulting Engineers



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FIGURE 2



Service Area Drainage and Land Use Report only includes those combined sewer systems which are tributary to control facilities or interceptors owned or operated by PVSC.

Drainage area and land use information was developed for each of the major drainage basins tributary to the Passaic River under the Facility Plan. Land use schematics showing the drainage area boundary, total drainage area, percent impervious coverage, major collector sewers and land use were developed for seventeen (17) of the sixty (60) combined sewer drainage basins tributary to PVSC CSO control facilities.

The percent impervious cover analyses completed on the major drainage basins in the Facility Plan were based upon aerial photography and field verification. System maps were used in conjunction with the aerial photography to establish contiguous land use areas. The limits of the established areas were then subjected to a field verification process wherein vehicle surveys were conducted to verify boundaries. Upon verification of land use boundaries, each contiguous land use area was analyzed through a walking survey of the area. Several typical blocks within each land use area were selected for detailed impervious area analysis. Walking surveys were conducted to log and detail impervious coverage including driveways, sidewalks, parking areas, and roof areas. Special consideration was given to see whether downspouts were tributary to the street or discharged overland. This information was then used to determine the percentage of impervious coverage within each block area and averaged for the field surveys conducted within a specific land use area.



The land use information developed during the Facility Plan was verified or updated by reviewing new aerial photography to note areas wherein changes in land use have occurred. In addition, the forty-six (46) CSO drainage basins which were not evaluated under the Facility Plan were analyzed to develop information on percent impervious cover and the land use distribution within each. The land use distribution was developed from recent (1995) aerial photography wherein contiguous land use types were delineated and visually analyzed. Field verifications of the aerial delineation's were not conducted nor was the percent impervious coverage analyses based on field collected data. In its place, estimates of impervious areas within each area, including driveways, sidewalks, and roofs, were made from the aerial photos with assumption made for typical sidewalk and driveway widths. The method and results of the percent impervious coverage determinations for these areas are provided on Table 1.

In addition to the land use distribution, drainage area information concerning subcatchment characteristics were developed for all drainage basins. The area of each drainage basin was determined using the detailed topographic mapping prepared under the Facility Plan. Field verification of all sewer system boundaries, as required under the General Permit, was conducted during the Phase II Sewer System Evaluation Survey conducted for PVSC by Killam Associates during the late 1970's to early 1980's. No further verification was therefore deemed necessary.

Preliminary estimates of other catchment characteristic necessary for the development of the land side model were also made from the Facility Plan topographic mapping of each drainage basin. Information on surface area, ground slope, overland flow width,





Table 1

Sheet No. 1 of 3

PVSC - CSO Study, Land Use Report		PERCENT IMPERVIOUS ANALYSIS					Job No. 261600.0003
Drainage Basin	Percentage of Area	Total Area (Sq. Ft.)	Sidewalk Area (Sq. Ft.)	Driveway Area (Sq. Ft.)	Road Surface Area (Sq. Ft.)	Bldg. Roof Area (Sq. Ft.)	Percent Impervious
<b>HARRISON</b>							
Hamilton St. Overflow	57%	136,500	8,000	0	15,900	41,300	48%
	43%	64,000	3,900	2,000	9,940	900	26%
	Overall						38%
Dey St. Overflow	Overall	86,800	4,800	24,400	24,450	32,500	99%
Cleveland Ave. Overflow	45%	129,850	9,600	7,200	20,240	36,540	57%
	55%	167,500	16,000	13,000	24,360	48,500	61%
	Overall						59%
Worthington Ave. Overflow	4%	99,000	0	0	0	0	0%
	41%	98,000	8,800	1,800	19,520	29,040	60%
	20%	484,850	4,800	16,600	72,500	6,900	21%
	28%	169,200	4,000	47,700	20,640	64,950	81%
	3%	109,650	9,360	7,200	11,520	39,600	62%
	4%	72,150	11,200		12,480	25,580	68%
	Overall						56%
Harrison Ave Overflow	89%	142,800	11,360	0	24,640	61,920	69%
	11%	48,800	5,280	1,000	7,920	22,400	76%
	Overall						70%
Bergen St. Overflow	34%	132,600	11,680	14,000	22,140	44,660	70%
	42%	86,800	4,800	24,400	24,450	32,500	99%
	24%	98,000	8,800	1,800	19,520	29,040	60%
	Overall						80%
Middlesex St. Overflow	Overall	153,700	14,280	51,000	25,600	41,500	86%
<b>KEARNY</b>							
Stewart St. Overflow	Overall	152,760	8,320	1,600	32,000	40,300	54%
Nairn St. Overflow	36%	118,250	9,080	0	21,590	37,125	57%
	25%	339,450	10,920	0	32,200	0	13%
	13%	336,000	9,000	187,500	29,500	56,700	84%
	18%	131,175	11,220	1,600	25,740	23,275	47%
	8%	53,750	2,400	1,000	9,100	20,400	61%
	Overall						48%
Marshall St. Overflow	79%	159,600	5,520	20,400	26,160	17,175	68%
	21%	167,500	16,000	13,000	24,360	48,500	61%
	Overall						67%
Dukes St. Overflow	Overall	267,750	19,200	2,400	37,950	85,550	54%
Tappan St. Overflow	81%	257,240	20,840	3,800	37,660	83,200	57%
	19%	171,600	2,500	0	11,700	37,300	31%
	Overall						52%
Washington St. Overflow	Overall	152,760	8,320	1,600	32,000	40,300	54%
Bergen Ave. Overflow	8%	122,500	0	0	0	0	0%
	45%	113,100	7,020	4,000	19,650	35,280	58%
	4%	235,850	8,100	12,400	22,080	46,450	38%
	43%	372,000	4,800	89,300	12,000	75,100	49%
	Overall						49%
<b>NEWARK</b>							
Orange St. Overflow	Overall	68,450	2,400	47,400	7,800	6,900	94%
Bridge St. Overflow	Overall	224,400	19,500	114,500	50,960	1,980	83%
Passaic St. Overflow	11%	38750	3480	6500	9600	14850	89%
	41%	73125	8500	6250	16800	15600	64%
	48%	144550	6600	4950	26560	21000	41%
	Overall						56%
3rd Ave. Overflow	Overall	159,000	5,200	23,700	28,000	20,500	49%

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Table 1 cont.

Sheet No. 2 of 3

PVSC - CSO Study, Land Use Report		PERCENT IMPERVIOUS ANALYSIS					Job No. 261600.0003
Drainage Basin	Sub-Area	Total Area (Sq. Ft.)	Sidewalk Area (Sq. Ft.)	Driveway Area (Sq. Ft.)	Road Surface Area (Sq. Ft.)	Bldg. Roof Area (Sq. Ft.)	Percent Impervious
NEWARK cont.							
Delevan Ave. Overflow	4%	27950	0	0	0	0	0%
	7%	77,500	3,000	3,850	14,220	8,000	38%
	89%	415,350	12,900	95,900	64,000	131,800	73%
	Overall						68%
Freeman St. Overflow	36%	132,600	8,160	14,300	26,280	22,500	54%
	58%	131,300	17,530	0	26,010	78,200	93%
	6%	196,350	29,840	0	30,880	42,500	53%
	Overall						76%
NEWARK (SOUTH SIDE)							
Peddie District Overflow	1.8%	157,500	9,360	24,300	26,880	32,300	59%
	1.8%	176,400	12,160	12,400	28,000	37,870	51%
	4.1%	117,800	0	0	4,960	0	4%
	13.4%	163,800	9,600	0	27,200	32,760	42%
	2.5%	49,950	2,700	6,500	10,060	9,900	58%
	2.5%	40,000	3,680	0	9,420	4,400	44%
	1.6%	90,000	4,800	0	17,000	30,600	58%
	1.3%	216,000	9,800	0	20,800	0	14%
	4.2%	43,350	2,450	0	10,400	14,560	63%
	7.5%	201,600	15,240	0	31,620	41,040	44%
	4.2%	63,000	1,600	18,000	8,500	17,175	72%
	2.1%	205,800	20,400	5,400	40,100	44,560	54%
	3.4%	79,050	4,500	4,800	22,820	12,760	57%
	6.7%	224,750	15,360	41,400	26,800	16,100	44%
	1.0%	215,875	8,700	9,700	34,000	19,865	33%
	1.6%	255,750	16,000	2,500	33,600	35,480	34%
	2.5%	399,300	29,000	4,000	62,600	31,900	32%
	13.6%	258,000	16,800	9,500	33,000	67,200	49%
	1.8%	155,550	19,200	4,400	22,960	49,740	62%
	0.9%	163,200	9,240	12,000	28,560	45,100	58%
	7.4%	130,050	9,800	14,400	26,600	52,900	80%
	1.4%	317,500	21,600	54,000	33,750	102,110	67%
	2.0%	184,600	11,940	10,000	40,480	87,125	81%
	1.6%	163,800	9,600	0	27,200	32,760	42%
	7.4%	79,050	4,500	4,800	22,820	12,760	57%
	1.8%	224,750	15,360	41,400	26,800	16,100	44%
	Overall						51%
Queen District Overflow	20%	266,600	4,600	56,450	7,040	91,350	60%
	1%	112,050	8,160	0	15,750	23,560	42%
	66%	154,800	1,260	0	3,570	0	3%
	1%	44,200	3,000	0	8,800	13,200	57%
	10%	101,400	6,840	0	20,000	13,440	40%
	2%	50,000	0	0	0	0	0%
Overall						19%	
Waverly District Overflow	17%	102,000	0	0	13,600	0	13%
	30%	100,800	8,400	41,050	20,200	22,400	91%
	12%	623,700	30,480	33,800	59,520	100,340	36%
	2%	157,500	1,000	93,550	21,000	3,000	75%
	29%	266,600	4,600	56,450	7,040	91,350	60%
	6%	112,050	8,160	0	15,750	23,560	42%
	4%	154,800	1,260	0	3,570	0	3%
	Overall						55%
EAST NEWARK							
Central Ave. Overflow	42%	167,500	16,000	13,000	24,360	48,500	61%
	58%	621,000	18,600	196,500	45,000	298,500	90%
	Overall						77%



Table 1 cont.

Sheet No. 3 of 3

PVSC - CSO Study, Land Use Report		PERCENT IMPERVIOUS ANALYSIS					Job No. 261600.0003
Drainage Basin	Sub-Area	Total Area (Sq. Ft.)	Sidewalk Area (Sq. Ft.)	Driveway Area (Sq. Ft.)	Road Surface Area (Sq. Ft.)	Bldg. Roof Area (Sq. Ft.)	Percent Impervious
<b>PATERSON</b>							
Short St.	50%	135,800	11,100	27,700	22,720	27,040	65%
Overflow	50%	121,250	7,620	3,000	24,660	34,500	58%
	Overall						61%
3rd Ave. Overflow	53%	167,025	9,840	4,800	33,440	69,820	71%
	24%	167,025	13,720	19,600	34,600	83,250	91%
	23%	161,200	10,920	7,200	33,200	57,600	68%
	Overall						75%
Keen St. Overflow	47%	102,400	12,800	14,400	20,200	12,000	58%
	53%	95,000	5,760	0	17,550	33,000	59%
	Overall						59%
S.U.M. Park Overflow	28%	64,000	3,900	2,000	9,940	900	26%
	54%	172,500	13,680	1,350	29,120	43,000	51%
	18%	127,300	3,600	7,050	30,600	17,200	46%
	Overall						43%
Bergen St. Overflow	Overall	188,650	16,500	9,050	28,900	42,440	51%
Bank St. Overflow	Overall	166,750	16,000	53,300	36,400	32,050	83%
Bridge St. Overflow	47%	76,000	2,820	3,600	17,600	16,500	53%
	53%	108,300	16,000	26,000	33,000	12,000	80%
	Overall						68%
W. Broadway Overflow	Overall	166,750	16,000	53,300	36,400	32,050	83%
Straight St. Overflow	74%	186,150	17,400	16,500	35,530	27,925	52%
	14%	124,875	8,280	54,190	28,800	30,000	97%
	12%	85,000	10,800	4,500	15,600	28,800	70%
	Overall						61%
2nd Ave. Overflow	65%	161,200	7,200	34,500	29,000	47,520	73%
	35%	167,025	13,720	19,600	34,600	83,250	91%
	Overall						79%
Warren St. Overflow	40%	109,025	10,080	1,000	22,860	35,200	63%
	29%	137,700	3,600	8,400	30,000	69,400	81%
	22%	287,850	10,800	57,400	40,500	91,300	69%
	9%	115,150	7,560	4,000	24,120	37,470	64%
	Overall						70%
6th Ave. Overflow	Overall	287,850	10,800	57,400	40,500	91,300	69%
11th St. Overflow	71%	146,160	12,080	6,000	32,000	57,000	73%
	29%	201,600	7,200	29,000	36,600	62,350	67%
	Overall						71%
E. 5th St. & 5th Ave. Overflow	Overall	287,850	10,800	57,400	40,500	91,300	69%
Franklin St. Overflow	Overall	110,700	6,000	2,500	16,640	8,950	31%
20th Ave. Overflow	79%	165,750	8,900	0	34,000	23,000	40%
	21%	124,875	6,360	36,700	15,200	62,200	96%
	Overall						52%
Mulberry St. Overflow	Overall	90,000	5,800	39,250	16,150	7,020	76%
E. 12th St. & 4th Ave. Overflow	Overall	161,200	10,920	7,200	33,200	57,600	68%

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Table 2

Sheet 1 of 2

PVSC - CSO Study, Land Use Report			DRAINAGE CALCULATION DATA			Job No. 261600.0003	
Drainage Basin	No.	Subcatchment	Area (Ac.)	Ground Slope (%)	Overland Flow Width (Ft.)	Subcatchment Length (Ft.)	Percent Impervious
<b>HARRISON</b>							
Hamilton St. Overflow	H-001	Overall	7 *	5.6%	1,220	250	38%
Cleveland Ave. Overflow	H-002	Overall	16 *	3.8%	2,790	250	59%
Harrison Ave. Overflow	H-003	Overall	84 *	3.1%	11,600	315	70%
Dey St. Overflow	H-004	Overall	2	1.0%	436	200	99%
Middlesex St. Overflow	H-005	Overall	64	1.6%	9,140	305	86%
Bergen St. Overflow	H-006	Overall	38 *	2.0%	4,730	350	80%
Worthington Ave. Overflow	H-007	Overall	208	2.0%	20,100	450	56%
<b>KEARNY</b>							
Stewart St. Overflow	K-001	Overall	44	2.0%	5,480	350	54%
Washington St. Overflow	K-002	Overall	64	1.6%	9,140	305	54%
Nairn St. Overflow	K-004	Overall	157	8.4%	12,400	550	48%
Marshall St. Overflow	K-005	Overall	19	9.1%	1,840	450	67%
Johnston St. Overflow	K-006	Overall	250	3.4%	38,900	280	68%
Ivy St. Overflow	K-007	Overall	831	2.7%	113,000	320	47%
Bergen Ave Overflow	K-008	A) 50%	55	7.5%	7,860	305	56%
		B) 50%	55	1.1%	1,710	1400	41%
Tappan St. Overflow	K-009	Overall	54	4.5%	6,340	370	52%
Dukes St. Overflow	K-010	Overall	18	3.4%	1,650	475	54%
<b>NEWARK</b>							
Verona Ave. Overflow	N-001	Overall	370	3.9%	40,300	400	50%
Delevan Ave. Overflow	N-002	Overall	55	6.2%	6,400	375	68%
Herbert Pl. Overflow	N-003	Overall	241	4.4%	27,600	380	44%
3rd Ave. Overflow	N-004	Overall	3	9.2%	1,010	130	49%
4th Ave. Overflow	N-005	Overall	200	5.3%	25,600	340	52%
Clay St. Overflow	N-006	Overall	1,739	3.0%	223,000	340	56%
Passaic St. Overflow	N-006C	Overall	27	4.2%	5,110	230	56%
Orange St. Overflow	N-007	Overall	8	6.0%	1,220	285	94%
Bridge St. Overflow	N-008	Overall	10	3.1%	1,160	375	83%
Rector St. Overflow	N-009	Overall	128	2.2%	11,400	490	78%
Saybrook Pl. Overflow	N-010	Overall	287	2.9%	26,000	480	69%
City Dock Overflow	N-011	Overall	397	2.9%	52,400	330	79%
Jackson St. Overflow	N-012	Overall	90	2.3%	16,300	240	83%
Polk St. Overflow	N-013	Overall	201	0.8%	18,000	490	79%
Freeman St. Overflow	N-014	Overall	116	1.0%	19,400	275	76%
<b>NEWARK (SOUTH SIDE)</b>							
Peddle District Overflow	SS-001	Overall	1,745	4.0%	230,000	330	51%
Queen District Overflow	SS-002	Overall	541 **	6.1%	32,200	732	19%
Waverly District Overflow	SS-003	Overall	316	1.0%	37,200	370	55%
<b>EAST NEWARK</b>							
Central Ave. Overflow	E-001	Overall	55	3.4%	5,640	425	77%

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\* Excludes Elevated Roadway Area

\*\* Excludes Subareas SS2A and SS2B

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Table 2 cont.

Sheet 2 of 2

PVSC - CSO Study, Land Use Report			DRAINAGE CALCULATION DATA			Job No. 261600.0003	
Drainage Basin	No.	Subcatchment	Area (Ac.)	Ground Slope (%)	Overland Flow Width (Ft.)	Subcatchment Length (Ft.)	Percent Impervious
<b>PATERSON</b>							
Curtis Pl. Overflow	P-001	A) 64%	774	5.0%	53,900	625	40%
		B) 36%	440	4.9%	66,100	290	39%
Mulberry St. Overflow	P-002	Overall	2	3.3%	290	300	76%
W. Broadway Overflow	P-003	Overall	4	1.9%	601	290	83%
Bank St. Overflow	P-004	Overall	1.5	1.5%	327	200	83%
Bridge St. Overflow	P-005	Overall	15	1.0%	3,040	215	68%
Montgomery St. Overflow	P-006	Overall	374	1.8%	39,300	425	69%
Straight St. Overflow	P-007	A) 75%	84	3.4%	13,300	275	52%
		B) 25%	28	3.2%	4,440	275	85%
Franklin St. Overflow	P-008	Overall	2	2.9%	348	250	31%
Keen St. Overflow	P-009	Overall	17	3.6%	3,610	205	59%
Warren St. Overflow	P-010	Overall	104	2.7%	12,600	360	70%
6th Ave. Overflow	P-011	Overall	41	1.8%	6,380	280	69%
E. 5th St. & 5th Ave Overflow	P-012	Overall	8	1.2%	3,490	100	69%
E. 11th St. Overflow	P-013	A) 30%	31	6.8%	5,630	240	71%
		B) 70%	72	4.3%	15,300	205	71%
E. 12th St. & 4th Ave. Overflow	P-014	Overall	25	5.1%	1,980	550	68%
S.U.M. Park Overflow	P-015	Overall	47	5.0%	6,110	335	43%
Northwest St. Overflow	P-016	Overall	242	5.7%	32,400	325	58%
Hudson St. Overflow	P-017 - P-020	A) 50%	74	7.5%	6,140	525	71%
		B) 50%	74	6.7%	12,400	260	71%
Bergen St. Overflow	P-021	Overall	5	1.7%	495	440	51%
Short St. Overflow	P-022	Overall	46	7.9%	6,790	295	61%
2nd Ave Overflow	P-023	Overall	26	1.2%	5,270	215	79%
3rd Ave Overflow	P-024	Overall	66	6.6%	10,300	280	75%
10th Ave. & 33rd St.	P-025	A) 40%	286	1.8%	36,600	340	57%
		B) 60%	426	2.6%	61,900	300	55%
20th Ave overflow	P-026	Overall	62	1.5%	12,000	225	52%
Market St. Overflow	P-027	A) 66%	969	3.6%	109,000	390	63%
		B) 34%	492	3.1%	46,600	460	60%

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subcatchment length, and percent impervious cover are provided in Table 2 separated by drainage basins and CSO control facilities. The values for these characteristics will be checked, used, or modified as necessary, by HydroQual Inc. during the development and calibration of the Level 4 SWMM.

### **3.2 Detailed Land Use Information**

The land use distribution in each combined sewer service area was determined from municipal zoning maps, the PVSC Wastewater Management Plan, and a review of 1995 aerial photography of the combined sewer municipalities. Schematics illustrating the land use distribution and percent impervious cover for specific areas were developed under the Facility Plan for seventeen (17) of the major drainage basins tributary to the PVSC interceptor system.

These schematics were modified, where necessary, and additional schematics were developed, providing detailed land use information on each of the sixty-three (63) drainage basins tributary to control facilities owned or operated by PVSC. These schematics are included, together with other drainage area information, in the Appendices of this report.

The Cities of Newark and Paterson have combined sewer overflow control facilities which are not owned or operated by the Passaic Valley Sewerage Commissioners. Over the years both Cities constructed new sewers to provide hydraulic relief to problem areas of the combined sewer systems. In most cases a static weir was used as a combined sewer overflow control facility to transfer stormwater flows to newly constructed relief sewer. These extensions of the combined sewer system in many cases had no other connections and were specifically designed to provide additional flow capacity to prevent surcharging of the



combined sewer collection system and subsequent basement and street flooding. While catch basins in the immediate area of the relief sewer were directly connected, catch basins in upstream areas remain connected to the combined sewer system.

The schematics showing the land use distribution for each drainage basin in the Appendices of this report also provide information for the land use tributary to relief sewers in the Cities of Newark and Paterson. Since all combined sewer areas of the Cities of Newark and Paterson are tributary to PVSC control facilities or interceptors, the drainage basin for the relief sewers represent a segment of the total drainage basin for the PVSC control facility and interceptor. Detailed information upon the locations, size, and overflow points associated with these municipal control facilities are provided in the **Facilities Inventory Sewer Service Area Maps** which was previously referred to in Section 2.

Summary information on the land use distribution for CSO drainage basins within the City of Paterson is provided on Table 3. The land use distribution analysis conducted in the City shows that the twenty-seven (27) PVSC regulators and associated combined sewer systems service a total land area of approximately 4,600 acres. In general, a review of the land use distribution in the City shows that residential areas are spread throughout but are primarily located in the east central and western sections. Commercial areas in the City of Paterson generally follow an east west pattern with the central business district located in the west central section of the City, while industrial areas are primarily located in the northern and southern regions along the Passaic River and Route 80.



**Table 3**  
**City of Paterson Land Use Distribution**

PVSC Permit Number	SSES Sub Area	Control Facility Name	Total Acres	Percentage of Total Area to Land Use Noted					
				R1	R2	R3	Open Space	Industrial	Commercial
1	AA&A1	Curtis Pl.	1214		63		24	8	5
	AA	Curtis Pl.	440		46		30	15	9
	A1	Curtis Pl.	774		72		21	5	2
2		Mulberry St.	2						100
3		West Broadway	4						100
4		Bank St.	2						100
5		Bridge St	15			53		47	
6	F	Montgomery St.	374		37			30	27
7	G1,G2	Straight St	112		74			14	12
8		Franklin Street	2					100	
9	H	Keen Street	17		53			47	
10	CC	Warren St.	104		49			51	
11	J	6th Ave.	41					100	
12	K	5th St. & 5th Ave.	8					100	
13		E. 11th Street	103		71			29	
14		E.12th St. & 4th Ave.	25		100				
15	A2	SUM Park	47		72		28		
16	B1	Northwest St.	242		75		2	3	20
17		Arch St.					See Hudson St.		
18		Jefferson St.					See Hudson St.		
19		Stout St.					See Hudson St.		
20		No. Straight St.					See Hudson St.		
21		Bergen St	5		100				
22	C	Short St	46		100				
23	Y	2nd Ave.	26		65			35	
24	N	3rd Ave.	66		76			24	
25	R&S	Tenth Ave. & 33rd St.	694		79		4	9	8
	R	Tenth Ave. & 33rd St.	268		90		1	5	4
	S	Tenth Ave. & 33rd St.	426		72		6	12	10
26	U	20th Ave.	6		79			21	
27	V1&V2	Market St.	1461		64		2	29	6
	V1	Market St.	492		64		1	33	2
	V2	Market St.	969		64		2	26	8
	B1&B2	Hudson St.	148	1	91		1	7	
		Total Area	4764						





**Table 4**  
**Harrison, Kearny and East Newark Land Use Distribution**

PVSC Permit Number	SSES Sub Area	Control Facility Name	Total Acres	Percentage of Total Area to Land Use Noted					
				R1	R2	R3	Open Space	Industrial	Commercial
		<b>Kearny</b>							
28		Stewart St.	39		100				
29		Washington St.	10		100				
30		Bergen Ave.	12						
31	B	Nairn St.	157	18	36	8	25	13	
32		Marshall St	19		21			79	
33	B	Johnston St.	250		79		6	3	12
34	C	Ivy St.	831		48		17	19	16
35		Bergen Ave.	110		49		8	43	
36		Tappan St.	54		81			19	
37		Dukes St.	18		100				
		Total Area	1,500						
		<b>East Newark</b>							
38	A	Central Avenue	55		42			58	
		<b>Harrison</b>							
39		Hamilton St.	7		57		43		
40		Cleveland Ave.	16		100				
41	A	Harrison Ave.	84		89				11
42		Dey St.	2					100	
43	A	Middlesex St.	64					100	
44		Bergen St.	38		24	34		42	
45	A	Worthington Ave.	208		41	3	24	28	4
		Total Area	419						



The summary information on the land use distribution for the CSO drainage basins within the Towns of Harrison and Kearny and the Borough of East Newark is provided in Table 4. The land use distribution analysis conducted in the Town of Harrison shows that there are seven (7) combined sewer drainage basins and regulators servicing a total land area of approximately 420 acres. Industrial areas are primarily located at the south end of the town while commercial areas are somewhat restricted to two main roads, Harrison Avenue and Frank E. Rogers Boulevard. Additional commercial and industrial pockets are also located along the Passaic River. The rest of the land use is primarily multi-family residential.

The Town of Kearny has ten (10) combined sewer drainage basins which service a total land area of approximately 1,500 acres. The town is primarily multi-family residential in the combined sewer areas with commercial development most found along Kearny Avenue which is a continuation of Frank E. Roger Boulevard in Harrison. Kearny Avenue runs in a north-south direction and separates the residential areas on the east and west sides. Industrial areas, with some pockets of commercial development, are located along the east side of the town adjacent to Schuyler Avenue.

The Borough of East Newark covers an area of approximately 55 acres and is all within one combined sewer drainage basin. The Borough's land use is divided relatively evenly between industrial on the east side, and residential on the west side. There are no contiguous commercial areas in the Borough.

The City of Newark contains fourteen (14) combined sewer drainage basins tributary to



the PVSC Main Interceptor Sewer and three (3) combined sewer drainage basins tributary to the South Side Interceptor which is owned by the City but, by agreement, operated and maintained by the PVSC. The City, which comprises approximately 15,700 acres, has a combined sewer system which services approximately 13,000 acres or approximately 85 percent of the City. The land use distribution tributary to each of the seventeen (17) combined sewer drainage basin is summarized in Table 5.

The City of Newark has a mixed land use with many areas containing residential, commercial and industrial uses. Industrial areas in the City are primarily located in the southeast region which is situated east of McCarter Highway, south of the Passaic River, and west of Newark Bay. This area however also includes the "Ironbound" section of Newark which contains an area of commercial and high density residential. The land use distribution south of Route 1 and 9 is primarily industrial although there are pockets of residential housing spread throughout the City. The central business district is located at the center of the City, west of McCarter Highway and Penn Station, from which commercial spokes propagate along major roadways to other sections of the City. Large residential areas are principally found in the north central and south sides of the City where old established neighborhood are located.

### **3.3 Separate Sanitary and Storm Sewer Systems**

As previously indicated the Cities of Newark and Paterson have over the years constructed storm sewer systems which were constructed as relief sewers to prevent street flooding and surcharging of the combined sewer systems upstream of the PVSC CSO control facilities. While for years these sewers were considered "Storm Sewers," under our current



**Table 5**  
**City of Newark Land Use Distribution**

PVSC Permit Number	SSES Sub Area	Control Facility Name	Total Acres	Percentage of Total Area to Land Use Noted					
				R1	R2	R3	Open Space	Industrial	Commercial
60	SS1	Peddie District	1745	1	41	17	5	19	17
61	SS2	Queen District	1066		45	1	38	11	5
62	SS3	Waverly District	316		6	12	21	59	2
46	B	Verona Ave.	370		57			21	14
47	D	Delevan St.	55		7		4	89	
48	E	Herbert Place	241		85		6		9
49		Third St.	3					100	
50	F1	Fourth Ave.	200		51		4	10	35
51	J,J1,J2,K	Clay St.	1739		50		19	6	24
	J	Clay St.	805		47		18	8	27
	J1	Clay St.	293		64		2	2	32
	J2	Clay St.	526		51		33	3	13
	K	Clay St.	115		30		10	20	40
-	F	Passaic St.	27			11		48	41
52		Orange St.	8					100	
53		Bridge St.	10						100
54	M	Rector St.	128		13		7		80
55	N	Saybrook Pl.	287		35			17	48
56	P1&P2	City Dock	397		38		1	15	38
57	Q	Jackson St.	90		46		1	9	44
58	R	Polk St.	201		49		2	25	29
59	S	Freeman St.	116		36	6		58	
		Total Area	6999						



definitions, they are part of the combined sewer system. In addition to the above, separate storm sewers have been constructed in isolated areas which do not have any connections to the combined sewer systems. In these areas, storm sewers were constructed to separate segments of the combined sewer system to provide for hydraulic relief of the combined sewer system by diverting surface runoff. Both types are noted on the **Facilities Inventory Sewer Service Area Maps** referenced in Section 2.

While small localized segments of the combined sewer systems may have been separated by the construction of a local storm sewer there are very few regions in the study area where large sanitary sewer drainage basins are located upstream of the combined sewer system. A notable exception to this general rule is in the Queen District combined sewer system in the South Side of Newark. Two sanitary sewer subareas, SSES Subareas SS2 and SS3 with a total service area of approximately 570 acres, discharge into the combined sewer system tributary to the Queen Street regulator. These and other areas with separate sanitary and/or storm sewer systems are mapped on the **Facilities Inventory** and are also highlighted on the individual Drainage Area/Land Use schematics found in Appendices of this report.

### **3.4 Pollutant Buildup**

The Facility Plan conducted on the Combined Sewer Systems tributary to PVSC CSO control facilities and interceptors include an analysis of pollutant load from each drainage basin using the Stormwater Management Model: Level 1 Preliminary Screening Procedures (EPA-600/2-77-064, March 1977). Using observed concentrations of BOD, suspended solids and COD obtained in the 1976 Overflow Analysis, runoff coefficients and pollutant load



factors were established for each drainage basin. A comparison was also made as to pollutant load factors determined from observed data and default values in SWMM-1. These showed that while runoff coefficients determined by each method were within the same general range, average concentrations (the loading factor "beta"), and the annual load (lb/year) were approximately five to six times greater using observed data. The results of the SWMM-1 analysis using observed data for BOD is provided in Table 6.

In addition to the above which was only completed for BOD loading, the following loading factors (beta) are provided in SWMM-1:

<u>Land Use</u>	<u>BOD<sub>5</sub></u>	<u>SS</u>	<u>VS</u>	<u>PO<sub>4</sub></u>	<u>N</u>
Residential	3.29	76.2	38.9	0.139	0.540
Commercial	13.2	91.8	579	0.312	1.220
Industrial	5.00	120.0	59.2	0.291	1.140
Other	0.47	11.1	10.8	0.041	0.250

While these loading factors can be used as a method of determining which areas should be monitored under the Discharge Characterization Study, the actual pollutant loads within each area will be determined through monitoring and modeling of the CSO discharge.

### **3.5 Significant Industrial Users**

Information has been obtained from the Industrial and Pollution Control Division of the Passaic Valley Sewerage Commissioners concerning the name, address, SIC code, and flow of industrial users within the Towns of Harrison and Kearny, the Borough of East Newark and the Cities of Newark and Paterson. The information, which included all industrial discharges in the study area has been processed to include only significant non-residential users and

## ANNUAL RUNOFF OF BOD-5

CSO NO.	CSO NAME	AREA ACRES	RAINFALL IN/YR	RUNOFF COEF.	RUNOFF MGY	AVE CONC PPM	- BETA -		LOADING LBS/YR
							LBS/AC	NO.	
							/INCH	OBS	
28	MARKET ST.	1530.16	47.93	0.6058	1206.2	216	29.69	6	2177269.
43	CLAY ST.	1773.45	41.45	0.5523	1102.3	201	25.16	7	1849420.
1	CURTIS PLACE	1153.46	47.93	0.4485	673.2	251	25.51	9	1410105.
26	10TH AV. & 33RD ST	669.96	47.93	0.5863	511.2	152	20.21	7	648999.
12	HUDSON ST.	378.61	47.93	0.6715	330.8	228	34.78	3	631108.
51	VERONA AV.	392.33	41.45	0.4850	214.1	215	23.68	6	385056.
13	MONTGOMERY ST.	434.95	47.93	0.6156	348.5	102	14.27	5	297407.
58	IVY ST.	639.30	41.45	0.5104	367.2	93	10.82	12	286818.
49	CITY DOCK	423.76	41.45	0.6398	305.1	98	14.23	11	249996.
47	HERBERT PLACE	243.11	41.45	0.5943	162.6	155	20.88	8	210425.
7	N.W. ST.	244.79	47.93	0.6862	218.6	90	14.01	6	164374.
14	STRAIGHT ST.	93.76	47.93	0.6787	82.8	213	32.81	4	147418.
48	POLK ST.	220.83	41.45	0.6212	154.4	96	13.55	5	123991.
24	SECOND AV.	38.17	47.93	0.5361	26.6	555	67.39	1	123298.
45	RECTOR ST.	143.59	41.45	0.5313	85.8	152	18.34	3	109180.
19	WARREN ST.	102.85	47.93	0.6240	83.5	143	20.31	4	100117.
50	FREEMAN ST.	127.66	41.45	0.7063	101.5	115	18.46	3	97660.
23	E. 12TH ST. & 4TH	23.38	47.93	0.5925	18.0	648	87.05	1	97553.
44	SAYBROOK PLACE	318.69	41.45	0.5967	214.0	54	7.35	6	97026.
72	NAIRN AV.	154.38	41.45	0.4045	70.3	152	13.97	3	89367.
73	WORTHINGTON AV.	224.53	41.45	0.6047	152.8	62	8.57	3	79771.
27	20TH AV.	50.10	47.93	0.5510	35.9	259	32.41	2	77827.
46	FOURTH AV.	156.02	41.45	0.7097	124.6	70	11.28	4	72963.
59	JOHNSTON AV.	235.14	41.45	0.5238	138.6	40	4.81	3	46906.
6	BRIDGE ST.	73.03	47.93	0.7316	69.5	77	12.92	2	45238.
22	E. 11TH ST.	99.54	47.93	0.5413	70.1	71	8.73	6	41672.
20	SIXTH AV.	46.55	47.93	0.6510	39.4	119	17.61	3	39296.
60	HARRISON AV.	68.36	41.45	0.5959	45.8	91	12.41	4	35151.
52	JACKSON ST.	67.06	41.45	0.7032	53.1	63	10.08	1	28025.
8	ARCH ST.	38.23	47.93	0.6057	30.1	83	11.41	8	20907.
17	SHORT ST.	16.16	47.93	0.6899	14.5	140	21.99	5	17029.
69	CLEVELAND AV.	14.40	41.45	0.8000	13.0	133	24.16	1	14416.
2	S.U.M. PARK	65.78	47.93	0.4366	37.4	42	4.17	4	13158.
21	E. 5TH ST. & 5TH A	7.48	47.93	0.7000	6.8	215	34.13	4	12239.
25	THIRD AV.	73.62	47.93	0.5701	54.6	26	3.46	1	12211.
61	BERGEN AV.	57.96	41.45	0.4574	29.8	48	5.01	2	12038.
55	BRIDGE ST.	10.00	41.45	0.8000	9.0	152	27.63	1	11452.
65	BERGEN ST.	60.54	41.45	0.6786	46.2	29	4.55	2	11417.
64	DUKES ST.	14.83	41.45	0.3738	6.2	188	15.98	1	9824.
66	MIDDLESEX ST.	37.80	41.45	0.7141	30.4	37	5.99	3	9390.
53	PASSAIC ST.	30.10	41.45	0.6776	23.0	45	7.02	2	8759.
67	MARSHALL ST.	13.91	41.45	0.7651	12.0	86	14.95	5	8619.
57	THIRD AV.	9.49	41.45	0.6471	6.9	145	21.33	1	8389.
62	CENTRAL AV.	49.40	41.45	0.3489	19.4	50	4.00	2	8186.
18	BERGEN ST.	4.09	47.93	0.6882	3.7	258	40.23	1	7889.
70	TAPPAN ST.	26.94	41.45	0.4739	14.4	62	6.73	2	7511.
71	BERGEN AV.	12.00	41.45	0.7500	10.1	86	14.65	5	7288.
32	STEWART AV.	39.73	41.45	0.4263	19.1	38	3.70	2	6084.
68	DEY ST.	6.00	41.45	0.8000	5.4	133	24.16	1	6006.
63	HAMILTON ST.	23.37	41.45	0.4639	12.2	47	4.99	2	4830.
56	DELAVAN AV.	57.73	41.45	0.3436	22.3	18	1.47	1	3520.
54	ORANGE ST.	13.00	41.45	0.8000	11.7	25	4.66	1	2510.
33	WASHINGTON AV.	17.03	41.45	0.4302	8.2	33	3.23	2	2277.
15	FRANKLIN ST.	2.00	47.93	0.7599	2.0	122	21.01	2	2014.
16	KEEN ST.	22.60	47.93	0.5392	15.9	15	1.84	1	1998.
4	WEST BROADWAY	3.61	47.93	0.8000	3.8	33	6.15	2	1065.
3	MULBERRY ST.	3.00	47.93	0.8000	3.1	24	4.49	2	647.
5	BANK ST.	3.12	47.93	0.8000	3.2	9	1.65	1	247.
TOTALS		10861.41			7481.0				9995354.

Table 6 Annual loadings of BOD for 58 CSO areas  
using observed mean concentration data

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separated into tributary areas by the PVSC NJPDES Permit Number for each control facility. A significant non-residential user is defined as a non-residential user with a wastewater flow in excess of 25,000 gpd or one that falls within the Federal Categorical Standards.

The information on significant non-industrial users has been separated by municipality into three Tables. Each Table provides information upon the PVSC permit number for that user, the facility name, location, SIC Code, and average daily flow. Maps showing the location of each significant non-residential users are included in a map package with this report. A column has been included in the table which references the map number on which the significant non-residential user is shown. The mapping uses a part of the permit number as the identification code for that user. The permit number is divided into three columns, the center five (5) numbers of which are used as the identification code for the map. In addition, the tables separate the users by drainage basin using the PVSC NJPDES permit site designation number as used within the Request for Authorization under the General Permit. Information concerning the significant non-residential users in the City of Paterson can be found on Table 7, the Towns of Harrison, Kearny, and Borough of East Newark on Table 8, and the City of Newark on Table 9.

The maps noting the locations of significant non-residential users are provided in a separate volume of this report referred to as "Appendix B". A table in the front of the Appendix provides information upon the municipality/region of the maps, and the map numbers corresponding to that municipality. The City of Newark has been separated into the three (3) categories used in the Sewer System Evaluation Survey to denote specific regions of the



**Table 7**  
**Significant Non-Residential Users**  
**City of Paterson**

					PVSC NJPDES				
					AVERAGE DAILY	Permit Site			
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	FLOW (MDG)	MAP #	Designation #		
	Map Reference								
27	40511	2	TRB ELECTRO CORP.	6 MORRIS ST.	PATERSON	3471	0.005	7081-10	001
27	40050	2	HIGHLAND ELECTRO PLAT.	63 DAYTON ST.	PATERSON	3471	0.001	7081-10	001
27	40363	0	SPECTRACHEM CORP.	200 SHERIDAN AVE.	PATERSON	2893	0.03	7081-7	001
27	40180	0	FABRICOLOR MFG. CORP.	24 1/2 VAN HOUTEN ST,	PATERSON	2865	0.162	7081-10	001
27	40185	2	LITTLE FALLS ALLOYS	171-191 CALDWELL AVE.	PATERSON	3471	0.004	7081-10	001
27	40111	2	PASSAIC COLOR & CHEM.	28-36 PATERSON ST.	PATERSON	2861	0.039	7081-10	005
27	40414	2	W.H. LINEN SUPPLY CO.	95 E. 20TH ST.	PATERSON	7213	0.047	7081-9	006
27	40492	2	MATERIALS PROCESSING	95-111 PRINCE ST.	PATERSON	2834	0.009	7081-10	006
27	40590	0	AL & JOHN INC.	444 MARSHALL ST.	PATERSON	2015	0.099	7081-9	006
27	40006	2	CRAFT TEXTILE PRINT.	44 BEECH ST.	PATERSON	2261	0.153	7081-10	006
27	40332	0	NO. JERSEY SKEIN DYE	152 PUTNAM ST.	PATERSON	2269	0.026	7081-8	010
27	40468	2	NU-TRONIC CIRCUIT CO.	250 E. 17TH ST.	PATERSON	3679	0.015	7081-8	010
27	40004	2	PATERSON BLEACHERY	209-217 E. 15TH ST.	PATERSON	2299	0.089	7081-8	010
27	40027	0	CHAMPION DYEING	192 PUTNAM ST.	PATERSON	2269	0.133	7081-8	010
27	40058	2	POLARIS PLATING INC.	200 KEEN ST.	PATERSON	3471	0.01	7081-8	010
27	40698	2	FAIRFIELD TEXTILES	2-16 WOOD ST.	PATERSON	2261	0.057	7081-8	011
27	40554	2	DIACOLOR-POPE, INC.	33 SIXTH AVE.	PATERSON	2893	0.424	7081-8	011
27	40386	2	SUN METAL FINISHING	57 WOOD ST.	PATERSON	3471	0.031	7081-8	011
27	40023	0	THOS. HENSHALL SILK	50 W. PEEL ST.	PATERSON	2262	0.001	7081-8	011
27	40509	0	POUGHKEEPSIE FINISHING	48 E. FIFTH ST.	PATERSON	2263	0.756	7081-8	012
27	40118	0	KIKUCHI COLOR & CHEM.	19 E. 5TH ST.	PATERSON	2816	0.038	7081-8	012
27	40480	2	KRAMER CHEMICALS	109 FIFTH AVE.	PATERSON	5161	0.005	7081-8	013
27	40485	0	COLUMBIA TEXTILE SVC.	28 RYLE AVE.	PATERSON	2261	3.681	7081-7	016
27	40045	2	DOUBLE D PLATING CO.	52 GARFIELD AVE.	PATERSON	3471	0	7081-7	020
27	40575	2	YANKEE LINEN	63 SECOND AVE.	PATERSON	7213	0.039	7081-8	023

**Table 7 (Continued)**  
**Significant Non-Residential Users**  
**City of Paterson**

						PVSC NJPDES			
					AVERAGE DAILY		Permit Site		
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	FLOW (MDG)	MAP #	Designation #		
	Map Reference								
27	40124	8	MONA INDUSTRIES	76 E. 24TH ST.	PATERSON	2843	0.238	7081-8	023
27	40011	0	ZENITH DYEING & FINISH.	53 E. 23RD ST.	PATERSON	2269	0.088	7081-8	023
27	40036	0	PERENNIAL PRINT CORP.	3 E. 26TH ST.	PATERSON	2261	0.274	7081-8	024
27	40008	0	TRIO DYEING & FINISHING	440-450 E. 22ND ST.	PATERSON	2261	0.214	7081-8	025
27	40604	2	TRIFORM PRODUCTS	219 LAFAYETTE ST.	PATERSON	3471	0.001	7081-8	025
27	40166	0	BARNERT HOSPITAL	680 BROADWAY	PATERSON	8062	0.033	7081-11	025
27	40621	0	MORTON INTERNATIONAL	335 MCLEAN BLVD.	PATERSON	2899	0.23	7081-11	026
27	40044	2	ANDARN ELECTRO SVCS.	72 MICHIGAN AVE.	PATERSON	3470	0.004	7081-9	027
27	40209	0	NORCORSS FOOTWEAR	27 KENTUCKY AVE.	PATERSON	2499	0.033	7081-9	027
27	40436	2	ALLEN SUPPLY/LAUNDRY	971 E. 24TH ST.	PATERSON	7219	0.037	7081-9	027
27	40156	0	ST. JOSEPH HOSPITAL	703 MAIN ST.	PATERSON	8062	0.228	7081-9	027
27	40182	2	OKONITE CO.	959 MARKET ST.	PATERSON	3357	0.046	7081-9	027
27	40340	2	G&H METAL FINISHERS	282 DAKOTA ST.	PATERSON	3471	0.004	7081-9	027
27	40005	0	CORAL DYEING & FIN.	555 E. 31ST ST.	PATERSON	2262	0.299	7081-9	027
27	40034	3	COMO TEXTILE PRINTS	191 E. RAILWAY AVE.	PATERSON	2262	0.24	7081-9	027
27	40345	2	QUALITY METAL FINISH.	80 GEORGE ST.	PATERSON	3471	0.036	7081-9	027
27	40056	2	INDEPENDENCE PLATING	107 ALABAMA AVE.	PATERSON	3471	0.063	7081-9	027
27	40610	4	LIPO CHEMICALS INC.	207 19TH AVE.	PATERSON	2844	0.01	7081-9	027
27	40637	3	POWER BATTERY CO. INC.	543 E. 42ND ST.	PATERSON	3356	0.033	7081-11	027
27	40545	2	HETERENE CHEMICAL	295 VREELAND AVE.	PATERSON	2833	0.022	7081-11	027
27	40720	0	CHART CORPORATION	787 E. 27TH ST.	PATERSON	2087, 2833	0.002	7081-9	027
27	40496	0	BIOCRAFT LABORATORIES	209 MCLEAN BLVD.	PATERSON	2834	0.019	7081-11	Separate Sanitary Sewer
27	40355	2	GALAXIE CHEMICAL	26 PIERCY ST.	PATERSON	2865	0.09	7081-7	Separate Sanitary Sewer

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**Table 8**  
**Significant Non-Residential Users**  
**Harrison, Kearny, and East Newark**

PVSC NJPDES									
AVERAGE DAILY							Permit Site		
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	FLOW (MDG)	MAP #	Designation #		
	Map Reference								
15	40317	0	WEST HUDSON HOSPITAL	206 BERGEN AVE.	KEARNY	8062	0.039	7081-38	030
15	40409	2	FREDERICK GUMM CHEM.	538 FOREST ST.	KEARNY	2899	0.005	7081-38	034
15	40503	2	KLEER KAST DIV.	450 SCHUYLER AVE.	KEARNY	3079	0.147	7081-38	034
15	40461	0	STANDARD TALLOW CORP.	1215 HARRISON AVE.	KEARNY	2077	0.055	7081-38	037
15	40601	0	UNIVERSAL FLAVORS	HARRISON/BERGEN AVE.	KEARNY	2087	0.044	7081-38	037
15	40515	0	HACKENSACK MEADOW.	HARRISON AVE.	KEARNY	4953	0.081	7081-38	037
15	40313	2	ASHLAND CHEM CO.	1106 HARRISON AVE.	KEARNY	2899	0.121	7081-38	037
15	40692	2	CAP CITY PRODUCTS	125 SANFORD AVE.	KEARNY	2841	0.092	7081-38	100
04	40250	0	ENGELHARD CORP.	1 WEST CENTRAL AVE.	E. NEWARK	3952	0.04	7081-39	038
04	40458	2	SUN PLASTICS CO. INC.	900 PASSAIC AVE.	E. NEWARK	3652	0.026	7081-39	038
04	40695	2	E&W TEXTILE PROCESS.	900 PASSAIC AVE.	E. NEWARK	2262	0.048	7081-39	038
13	40741	4	HARRISON ALLOYS, INC.	308 MIDDLESEX ST.	HARRISON	3356	0	7081-39	043
13	40229	0	EAGLE AFFILIATES	505 MANOR AVE.	HARRISON	3079	0.033	7081-39	045
13	40459	3	HARRISON BAKING CO.	840 JERSEY ST.	HARRISON	2051	0.036	7081-39	045
13	40532	0	HENKEL CORPORATION	FIRST & ESSEX STS.	HARRISON	2833	0.039		Separate Sanitary Sewer

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Table 9  
Significant Non-Residential Users  
City of Newark

								PVSC NJPDES	
								Permit Site	
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	AVERAGE DAILY FLOW (MDG)	MAP #	Designation #		
	Map Reference								
20	40136	3	SETON CO. LEATHER	349 ORATON ST.	NEWARK	3111	1.437	7081-54	046
20	40331	0	COLUMBUS HOSPITAL	495 N. 13TH ST.	NEWARK	8062	0.052	7081-53	046
20	40569	0	ARDMORE CHEMICAL CO.	29 RIVERSIDE AVE.	NEWARK	2869	0.012	7081-54	047
20	40026	7	A&L DYERS	36 SEABURY ST.	NEWARK	2269	0.011	7081-54	047
20	40712	2	CHEMICAL COMPOUNDS	29-75 RIVERSIDE AVE.	NEWARK	2865	0.004	7081-54	048
20	40328	0	ST. MICHAEL MED. CTR.	268 M. L. KING BLVD.	NEWARK	8062	0.042	7081-52	051
20	40079	0	HY-GRADE ELECTROPLAT.	35 FOURTH ST.	NEWARK	3471	0.001	7081-55	051
20	40533	3	SUPREME HEAT TREATING	8-12 CLIFTON AVE.	NEWARK	3471	0.001	7081-52	051
20	40326	0	UNITED HOSPITAL	15 S. NINTH ST.	NEWARK	8062	0.075	7081-55	051
20	40054	0	C. PATTI ELECTRO PLAT.	27 FIRST ST.	NEWARK	3471	0.005	7081-55	051
20	40746	3	FABER-CASTELL CORP.	41-44 DICKERSON ST.	NEWARK	3069	0.064	7081-55	051
20	40071	2	MANCO PLATING INC.	390 PARK AVE.	NEWARK	3471	0.005	7081-55	051
20	40357	6	UNIV. OF MED/DENTR.	100 BERGEN ST.	NEWARK	8221	0.949	7081-55	051
20	40202	2	STIRRUP METAL PROD.	215 EMMET ST.	NEWARK	3469	0.002	7081-50	056
20	40444	2	ALL METAL POLISHING	23 GEORGE ST.	NEWARK	3471	0.004	7081-48	058
20	40041	2	MOYER PLATING CORP.	175 CHRISTIE ST.	NEWARK	3471	0.009	7081-48	059
20	40325	0	REYOM CORPORATION	173 CHRISTIE ST.	NEWARK	3471	0.004	7081-48	059
20	40190	0	NJ TRANSIT PENN ST.	RAYMOND PLAZA W.	NEWARK	4013	0.083	7081-50	60
21	40072	2	MARA POLISHING & PLAT.	105 W. PEDDIE ST.	NEWARK	3471	0.005	7081-51	060
21	40082	2	BEST PLATING & POLISH.	443 S. TENTH ST.	NEWARK	3471	0.005	7081-51	060
21	40145	3	BEST PROVISIONS CO.	144 AVON AVE.	NEWARK	2010	0.019	7081-51	060
21	40310	0	AURIC FIDELITY CHEM.	470 FRELINGHUYSEN AVE.	NEWARK	2842	0.002	7081-49	061
21	40407	3	NJ GALVANIZING & TINNING	139 HAYNES AVE.	NEWARK	3479	0.003	7081-46	061
21	40310	0	AURILYTE PROCESS CO.	25 MCWHORTER ST.	NEWARK	3471	0.005	7081-49	061
21	40308	0	NEWARK BETH ISRAEL	201 LYONS AVE.	NEWARK	8062	0.151	7081-49	061
21	40042	2	KEYSTONE AUTOMOTIVE	24 LEGAL ST.	NEWARK	3471	0.003	7081-49	061



**Table 9 (Continued)**  
**Significant Non-Residential Users**  
**City of Newark**

PVSC NJPDES									
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	AVERAGE DAILY		Permit Site		
					FLOW (MDG)	MAP #	Designation #		
Map									
Reference									
21	40365	0	INDOL COLOR DIV.	1 VIRGINIA ST.	NEWARK	2865	0.058	7081-45	062
20	40526	3	BON-ART INTERNATIONAL	99 EVERGREEN AVE.	NEWARK	2542	0.012	7081-45	062
21	40687	0	CHELSEA CATERING DIV.	330 PUBLIC SVC RD.	NEWARK	5812	0.077	7081-45	062
21	40197	2	ANHEUSER BUSCH INC.	200 US HWY NO. 1	NEWARK	2082	3.57	7081-46	South Side Interceptor
21	40314	0	PENICK CORPORATION	158 MT. OLIVET AVE.	NEWARK	2833	0.209	7081-45	062
20	40589	0	DREHER LEATHER MFG.	49 VESSEY ST.	NEWARK	3111	0.047	7081-50	Adams Street CSO Point
20	40573	2	KREMENTZ & CO.	375 MCCARTER HWY.	NEWARK	3915	0.01	7081-50	Adams Street CSO Point
20	40697	2	STEEL CRAFT FLOURES.	191 MURRAY ST.	NEWARK	3646	0.007	7081-50	Adams Street CSO Point
20	40629	3	COOKSON PIGMENTS INC.	256 VANDERPOOL ST.	NEWARK	2815	0.799	7081-50	Adams Street CSO Point
20	40160	0	ST. JAMES HOSPITAL	155 JEFFERSON ST.	NEWARK	8062	0.029	7081-50	Adams Street CSO Point
20	40118	2	GENERAL COLOR CO.	24-26 AVENUE B	NEWARK	2816	0.005	7081-50	Adams Street CSO Point
20	40341	3	HANOVIA	100 CHESTNUT ST.	NEWARK	3699	0.044	7081-50	Adams Street CSO Point
10	40623	3	SAFER TEXTILE PROC.	1875 MCCARTER HWY.	NEWARK	2269	0.652	7081-54	Separate Sanitary Sewer
20	40454	0	POLAROME MFG. CO. INC.	361 SOUTH ST.	NEWARK	2087	0.058	7081-50	Separate Sanitary Sewer
20	40704	2	REICHOLD CHEMICALS	400 DOREMUS AVE.	NEWARK	2821	0.078	7081-43	Separate Sanitary Sewer
20	40352	2	P&K POLE PRODUCTS	84 FOUNDRY ST.	NEWARK	3646	0.011	7081-43	Separate Sanitary Sewer
20	40142	2	DARLING INTERNATIONAL	825 WILSON AVE.	NEWARK	2077	0.145	7081-43	Separate Sanitary Sewer
20	40476	0	CARDOLITE CORP.	500 DOREMUS AVE.	NEWARK	2892	0.088	7081-43	Separate Sanitary Sewer
20	40115	0	HONIG CHEMICAL	414 WILSON AVE.	NEWARK	2818	0.092	7081-47	Separate Sanitary Sewer
20	40329	0	TROY CHEMICAL CORP.	ONE AVENUE L	NEWARK	2851	0.046	7081-47	Separate Sanitary Sewer
20	40683	2	GLOBE METAL FINISHING	8 AVENUE B	NEWARK	3471	0.009	7081-50	Separate Sanitary Sewer
20	40629	3	COOKSON PIGMENTS	256 VANDERPOOL ST.	NEWARK	2815	0.799	7081-50	Separate Sanitary Sewer
20	40140	2	NEWARK BOXBOARD CO.	17 BLANCHARD ST.	NEWARK	6658	0.201	7081-48	Separate Sanitary Sewer
20	40665	0	HERAEUS, INC.	65 EUCLID AVE.	NEWARK	3341	0.003	7081-48	Separate Sanitary Sewer
20	40670	0	O'BRIEN COGENERATION	35 BLANCHARD ST.	NEWARK	4961, 4911	0.098	7081-48	Separate Sanitary Sewer
20	40622	2	HANDY STORE FIXTURES	337 SHERMAN AVE.	NEWARK	2542	0.01	7081-50	Separate Sanitary Sewer



Table 9 (Continued)  
Significant Non-Residential Users  
City of Newark

								PVSC NJPDES	
								Permit Site	
Permit Number	FACILITY NAME	FACILITY ADDRESS	CITY/TOWN	SIC CODE	AVERAGE DAILY FLOW (MDG)	MAP #	Designation #		
Map									
Reference									
20	40251	0	EXPRESS CONTAINER	105 AVENUE L	NEWARK	2653	0.031	7081-47	Separate Sanitary Sewer
20	40727	0	NEWARK BAY COGENER.	414-462 AVENUE P	NEWARK	4961	0.076	7081-43	Separate Sanitary Sewer
20	40667	5	CHASE LABORATORIES	280 CHESTNUT ST.	NEWARK	2834	0.09	7081-50	Separate Sanitary Sewer
20	40177	2	CHEMICAL WASTE MGMT	100 LISTER AVE.	NEWARK	4953	0.041	7081-48	Separate Sanitary Sewer
20	40311	2	BENJAMIN MOORE	134 LISTER AVE.	NEWARK	2851	0.036	7081-48	Separate Sanitary Sewer
20	40143	2	HARRY BERKOWITZ IND.	38-42 BAY AVE.	NEWARK	2077	0.008	7081-50	Separate Sanitary Sewer
20	40370	2	REICHHOLD CHEMICALS	46 ALBERT ST.	NEWARK	2821	0.022	7081-48	Separate Sanitary Sewer
21	40583	0	COLUMBIA SUSSEX CORP.	120 FRONTAGE RD.	NEWARK	7213	0.046	7081-46	Separate Sanitary Sewer
20	40110	2	ADCO CHEMICAL CO.	49 RUTHERFORD ST.	NEWARK	2821	0.005	7081-47	Separate Sanitary Sewer
20	40641	2	AARHUS, INC.	131 MARSH ST.	NEWARK	2079	0.028	7081-44	Separate Sanitary Sewer
20	40475	2	FIRMENICH/CHEM FLEUR	928-964 DOREMUS AVE.	NEWARK	2869	0.035	7081-43	Separate Sanitary Sewer
20	40580	2	RUGGIERO SEAFOOD	146-162 PENNINGTON	NEWARK	5142	0.058	7081-50	Separate Sanitary Sewer
20	40609	2	ROSE COLOR INC.	170 BLANCHARD ST.	NEWARK	2865	0.005	7081-48	Separate Sanitary Sewer
20	40104	2	SUN CHEMICAL CORP.	185 FOUNDRY ST.	NEWARK	2865	0.155		Separate Sanitary Sewer
20	40457	0	WITCO CORP.	652 DOREMUS AVE.	NEWARK	2899	0.206		Separate Sanitary Sewer
20	40112	2	AUTO. ELECTROPLATING	157 FOUNDRY ST.	NEWARK	3471	0.007	7081-43	Separate Sanitary Sewer
20	40408	2	ANODIZING CORPORATION	139 AVENUE L	NEWARK	3471	0.009	7081-47	Separate Sanitary Sewer
20	40728	0	HILTON DAVIS CO.	120 LISTER AVE.	NEWARK	2816	0.221	7081-48	Separate Sanitary Sewer
20	40559	3	SHOFAR KOSHER FOODS	296 ADAMS ST.	NEWARK	2011	0.015	7081-50	Separate Sanitary Sewer
20	40108	0	ALLIANCE CHEMICAL	33 AVENUE P	NEWARK	2816	0.023	7081-43	Separate Sanitary Sewer
20	40517	0	MOTHER'S FOOD PROD.	80 AVENUE K	NEWARK	2032	0.141	7081-47	Separate Sanitary Sewer
20	40425	2	KOHLER DELICATESSEN	57 NAPOLEON ST.	NEWARK	2013	0.052	7081-48	Separate Sanitary Sewer
20	40252	0	FAIRMOUNT CHEMICAL	117 BLANCHARD ST.	NEWARK	2869	0.097	7081-48	Separate Sanitary Sewer
20	40335	3	CROMPTON & KNOWLES	52 AMSTERDAM ST.	NEWARK	2865	0.408	7081-48	Separate Sanitary Sewer
20	40324	2	ELAN CHEMICAL CO.	268 DOREMUS AVE.	NEWARK	2869	0.113	7081-43	Separate Sanitary Sewer
20	40742	2	PREM KHICHI T/A	27 TOMPKINS POINT RD.	NEWARK	3479	0	7081-50	Separate Sanitary Sewer
20	40141	0	GREAT AMERICAN VEAL	50 AVENUE L	NEWARK	2011	0.007	7081-47	Separate Sanitary Sewer



City. These include the North Central, South Side, and Southeast regions.



#### **IV. Sewer Line Data**

##### **1. Service Area Population Data**

Estimates of populations tributary to each of the CSO drainage basin were developed from 1990 Census data obtained for each of the five (5) municipalities within the report area. Detailed census data, broken down by municipality, census tract, and blocks were obtained from computer files made available by the Federal government. In addition to the population tables separating population numbers into census tract and block numbers, census maps showing the boundaries for each census tract and block were also obtain. Sewer system drainage boundaries were superimposed upon the census maps providing a means to determine which tracts and blocks, or portions thereof, fit within the drainage basin.

Population information for each drainage basin was then totaled using the Census population numbers provided for specific tracts and blocks. In areas where the drainage area boundary bisected the population block and tract, the percentage of the population area within the drainage basin was used to proportion and estimate the population in that segment of the drainage basin. This was conducted for each of the sixty-three (63) drainage basins tributary to PVSC CSO control facilities.

The population data for combined sewer systems has been separated by municipality into three tables. Each table provides information upon the PVSC NJPDES Permit Site Designation Number, the municipal NJPDES Permit Site Designation Number, the CSO control facility name, and the 1990 population for the drainage basin tributary to the control facility.





**Table 10**  
**Population Data**  
**for the City of Paterson**

<b>CSO Control Facility</b> <b>Designation</b>	<b>PVSC NJPDES</b> <b>Permit Site</b> <b>Designation Number</b>	<b>Municipality</b> <b>NJD PES</b> <b>Permit Site</b> <b>Designation Number</b>	<b>SSES</b> <b>Sub Area</b> <b>Designation</b>	<b>1990</b> <b>Census</b> <b>Population Estimate</b>
CURTIS PLACE	001	001	AA,A1	17,646
MULBERRY ST.	002	002	-	0
WEST BROADWAY	003	003	D	0
BANK ST.	004	004	BB	134
BRIDGE ST.	005	005	E	685
MONTGOMERY ST.	006	006	F	14,320
STRAIGHT ST.	007	007	G1,G2	4,642
FRANKLIN ST.	008	008	-	0
KEENE ST.	009	009	H	697
WARREN ST.	010	010	CC	3,281
SIXTH AVE.	011	011	J	8
E.5TH ST. & 5TH AVE.	012	012	K	0
E. 11TH ST.	013	013	L	3,732
E.12TH & FOURTH AV	014	014	M	999
S.U.M. PARK	015	015	A2	0
NORTHWEST ST.	016	016	B1	13,537
ARCH ST.	017	017	B1	1,038
JEFFERSON ST.	018	018	-	1,018
STOUT ST.	019	019	-	0
N. STRAIGHT ST.	020	020	B2	3,348
BERGEN ST.	021	021	C	138
SHORT ST.	022	022	C	1,241
SECOND AVE.	023	023	Y	593
THIRD AVE.	024	024	N	2,049
33RD ST. & 10TH AVE.	025	025	R,S	24,336
20TH AVE.	026	026	U	1,022
MARKET ST.	027	027	V1,V2	37,927
<b>Total Population Served</b>				<b>132,391</b>



**Table 11**  
**Population Data**  
**for Harrison, Kearny, and East Newark**

<u>CSO Control Facility</u> <u>Designation</u>	<u>PVSC NJPDES</u> <u>Permit Site</u> <u>Designation Number</u>	<u>Municipality</u> <u>NJPDES</u> <u>Permit Site</u> <u>Designation Number</u>	<u>SSES</u> <u>Sub Area</u> <u>Designation</u>	<u>1990</u> <u>Census</u> <u>Population Estimate</u>
<b>Kearny</b>				
STEWART AVE.	028	K-001	A	973
WASHINGTON AVE.	029	K-002	A	1,229
BERGEN AVE.	030	K-003	B	566
NAIRN AVE.	031	K-004	B	1,155
MARSHALL ST.	032	K-005	B	66
JOHNSTON AVE.	033	K-006	B	9,484
IVY ST.	034	K-007	C	17,122
BERGEN AVE.	035	K-008	C	1,282
TAPPAN ST.	036	K-009	C	598
DUKE ST.	037	K-010	C	11,297
		<b>Total Population Served</b>		<b>43,772</b>
<b>East Newark</b>				
CENTRAL AVE.	038	E-001	A	2,085
<b>Harrison</b>				
NEW ST.	039	H-001	A	88
CLEVELAND AVE.	040	H-002	A	861
HARRISON AVE.	041	H-003	A	3,727
DEY ST.	042	H-004	A	2
MIDDLESEX ST.	043	H-005	A	223
BERGEN ST.	044	H-006	A	1,508
WORTHINGTON AVE.	045	H-007	A	5,857
		<b>Total Population Served</b>		<b>12,266</b>



**Table 12**  
**Population Data**  
**for the City of Newark**

<u>CSO Control Facility</u> <u>Designation</u>	<u>PVSC NJPDES</u> <u>Permit Site</u> <u>Designation Number</u>	<u>Municipality</u> <u>NJDPES</u> <u>Permit Site</u> <u>Designation Number</u>	<u>SSES</u> <u>Sub Area</u> <u>Designation</u>	<u>1990</u> <u>Census</u> <u>Population Estimate</u>
VERONA AVE.	046	N-001	A,B	9,991
DELVAN AVE.	047	N-002	D	405
HERBERT PLACE	048	N-003	E	10,400
THIRD AVE.	049	N-004	F2	23
FOURTH AVE.	050	N-005	F1,I	8,252
CLAY ST.	051	N-006	J,J1,J2,K,K1	51,339
ORANGE ST.	052	N-006C	F	250
BRIDGE ST.	053	N-007	M2	24
RECTOR ST.	054	N-008	M1	16
SAYBROOK PL.	055	N-009	M	2,266
CITY DOCK	056	N-010	N,O	6,355
JACKSON ST.	057	N-012	Q,Q1,Q2,Q3	4,129
POLK ST.	058	N-013	R	8,679
FREEMAN ST.	059	N-014	S,S1,S2,S3	4,903
PEDDIE ST.	060		SS1	42,373
QUEENS DISTRICT	061		SS2,2A,2B	20,977
WAVERLY DISTRICT	062		SS3	3,977
<b>Total Population Served</b>				<b>174,359</b>



The population analysis has shown the combined sewer systems in the City of Paterson service a population of approximately 132,400 people. The population breakdown for CSO drainage basins in the City of Paterson are found on Table 10. The population analysis also shows that combined sewer systems in the Towns of Harrison services 12,266 people, in Kearny 43,772 people, and in the Borough of East Newark 2,085 people. The population breakdowns for these municipalities are provided in Table 11. In the City of Newark approximately 174,400 people live in the combined sewer areas of the City. The detailed population breakdown for the City of Newark is provided in Table 12.

## **2. Sewer Pipe Information**

The size and pipe configuration, including service area delineation's of the combined sewer systems within the Towns of Harrison and Kearny, the Borough of East Newark, and the Cities of Newark and Paterson are provided in detail on the maps contained in the **Facilities Inventory Sewer Service Maps** previously referenced. In general all sewers indicated on these plans with only one pipe size are circular pipe, typically of vitrified clay material for smaller pipe sizes and brick construction for larger diameters. Sewer pipes denoted with both horizontal and vertical dimensions are mostly brick sewers. Most brick sewers within the study area are egg shaped with the higher dimension denoting the height of the sewer and the smaller dimension the width. Multi-dimensional sewers which are not egg shaped or of brick construction are indicated on the plans with the pipe material and shape noted.

In addition to the detailed mapping provided under the Facilities Inventory, detailed profiles of all major collector sewers within each municipality were developed under the Facility



Plan. The **Passaic Valley Sewerage Commissioners Combined Sewer Overflow Facilities Plan, Profile of Major Interceptors** provides detailed information on all major collector sewers within the combined sewer municipalities including pipe size, slope and theoretical flow capacities. The collector sewers which have been surveyed and are included in the set of profiles have been highlighted on the **Facilities Inventory Sewer Service Area Maps** to allow for reference between the plan and profiles which are in separate sets.

### **3. Dry Weather Flow and Pollutants**

Information upon the dry weather flow and pollutant loads from each drainage basin was developed during the PVSC Overflow Analysis conducted in the mid-1970's. This information has been reproduced and is available in the Appendices of this report together with the detailed drainage basin information which has been compiled. Notwithstanding the above, it is anticipated that this information will be updated as work progresses under the General Permit. Metering of dry weather flow and dry weather wastewater quality sampling is planned for each drainage basin in Harrison, Kearny, East Newark, and Paterson. In addition, it is our understanding that the City of Newark will also conduct background metering and sampling on the drainage basins within the City. The data provided in this report will be updated as new information is developed and average daily flow and water quality is made available.

### **4. Wastewater Treatment Facilities**

The Passaic Valley Sewerage Commissioners' Water Pollution Control Facility is located on Wilson Avenue in Newark and operates under NJPDES Permit Number NJ0021016. The plant has a present design capacity of 330 mgd and discharges treated effluent to the surface



waters of Upper New York Bay which has a receiving water classification of SE-2. The treatment plant also has a secondary outfall for treated effluent in Newark Bay. Discharge from the Newark Bay outfall is restricted to the volume which exceeds the hydraulic capacity of the main discharge pipe. In practice, the Newark Bay discharge has never been utilized.

The PVSC Water Pollution Control Facility in Newark services forty-seven (47) municipalities within the service district. Twenty-seven (27) of these municipalities, including all of the combined sewer systems, are entirely tributary to the PVSC facilities. In addition, twenty (20) municipalities are only partially within the PVSC Service District. It has been estimated in the PVSC Wastewater Management Plan that the population within the PVSC District is 1,328,699 based upon the 1990 Census Data.

All of the combined sewer systems within the PVSC Service District are tributary to the Passaic Valley Sewerage Commissioners Water Pollution Control Facility. The main interceptor sewer of the Passaic Valley Sewerage Commissioners begins in Paterson and generally follows the alignment of the Passaic River in Newark. The Cities of Newark and Paterson are both tributary to the main interceptor while Harrison, Kearny, and East Newark are tributary to the Harrison Branch Interceptor which crosses the Passaic River near Harrison Avenue. Three (3) main venturi meters are used to measure flow in the main interceptor. These are the Paterson Mainline Meter, the Passaic Mainline Meter and the 2nd River Mainline Meter. Flow from Harrison, Kearny, and East Newark is metered just prior to the Passaic River at the 4th Avenue Metering Station. In addition all flow into the Treatment Plant from the Main and South Side Interceptors and the Hudson County Force Main is metered at the



influent to the primary clarifiers.

## 5. Combined Sewer Overflow Points

Overall there are sixty-three (63) combined sewer control facilities owned or operated by the PVSC. Each of these overflow control facilities is associated with a single discharge point.

In addition to these, the Cities of Newark and Paterson operate and maintain their own control facilities, typically static weirs, which were installed over the years to reduce flooding and surcharging of the municipal systems. While the number of individual control facilities within each system may be high, there are typically multiple controls for each discharge pipe. The City of Paterson control facilities are all tributary to four (4) individual discharge points, while the City of Newark facilities are tributary to seven (7) individual discharge pipes.

The location of each PVSC control point, and the location of upstream CSO controls (referred to as an overflow point) on the municipal systems are shown on the **Facilities Inventory Sewer System Area Maps** as prepared by Killam Associates. These maps provide information upon drainage basins, topography, pipe size and type, and the location of major PVSC control and interceptor facilities. In addition to the Facilities Inventory Map, detailed information is provided upon each combined sewer overflow drainage basin in the Appendices of this report. The Appendices which have been broken down by municipality and drainage basin includes:

- a. A general description of the CSO facilities in each municipality;
- b. A discussion from the Overflow Analysis of each individual drainage basin including information upon base data which was developed and hydraulic information on each



- control facility and overflows recorded;
- c. Information from the Overflow Analysis including the location, layout, drainage basin, and profile for each PVSC control facility; and
  - d. Service Area Land Use schematics indicating the service area size, land use distribution, and impermeable coverage within each CSO drainage basin.

Additional information concerning the PVSC control facilities is also provided in the Sewer System Inventory Report.

Notwithstanding the level of detail available on the combined sewer systems tributary to the PVSC interceptor system additional information will be developed by individual municipalities as they proceed toward meeting the requirements of the General Permit. While the City of Newark has completed and submitted their Plan for Solids and Floatable Controls, the other four (4) municipalities still need to complete this requirement. The City of Paterson and the Town of Harrison have recently received pre-award approval of their Planning Study under their Sewage Infrastructure Improvement Act grant application. It is anticipated that this work, which should commence in the near future, will provide additional information on the operation of these CSO systems. This information will be used to update this report as it is obtained.